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J02 Yuma Proving Ground - Water Utility Systems

J02.1 Yuma Proving Ground Overview

Yuma Proving Ground (YPG) is located adjacent to the Colorado River in the Sonora Desert, 25 miles north of the city of Yuma, Arizona. It is approximately 180 miles east of San Diego, California and approximately 185 miles southwest of Phoenix, Arizona. YPG is generally "U-shaped" and covers over 1,300 square miles, an area larger than the state of Rhode Island. YPG's boundaries extend 58 miles north and south and 52 miles east and west. YPG also has limited access rights over and in the KOFA Game refuge, located in the center of the "U".

YPG's history dates back to 1943 when the U.S. Army Corps of Engineers opened the Yuma Test Branch (the Test Branch) along the Colorado River below the Imperial Dam to test new bridge designs, boats, vehicles and well-drilling equipment. After the war, the work at the Test Branch declined until the Installation, in January 1950, was temporarily turned over to the Corps of Engineers. Yuma Test Station (the Station) was reactivated a year later and placed under the control of the Sixth Army. The primary mission of the Station was expanded to conduct desert environmental testing of military equipment. In 1962, control of the Station was reassigned to the Army Materiel Command (AMC) and placed under the immediate control of the Army Test and Evaluation Command (ATEC). The Installation's name was changed to Yuma Proving Ground in 1963. In 1974, YPG was designated as a Major Range and Test Facility Base (MRTFB) by DoD.

Today, YPG is a multi-purpose test facility able to test every weapon system in the ground combat arsenal. Over 2,000 military and civilian employees are employed in a wide variety of technical occupations at the Proving Ground. YPG's major testing capabilities include:

- Ground weapons system;
- Helicopter armament and target acquisition systems;
- Artillery and tank munitions;
- Cargo and personnel parachutes, including guided systems technologies;
- Mines and mine removal systems;
- Tracked and wheeled vehicles in desert environment;
- Vibration-free, interference-free test of smart weapons systems; and
- Nuclear Regulatory Commission (NRC) license for testing of deleted uranium munitions.

YPG is generally divided into three major areas: the Laguna area, the KOFA Firing Range, and the Cibola Range. Located on the southwest corner of YPG, most of the Installation's facilities and supporting utility infrastructure are located either in or relatively near the Laguna area. These facilities include the Main Administration Area (MAA), Yuma Test Center (YTC), Laguna Army Airfield (LAAF), KOFA Front Firing South (KFFS), KOFA Front Firing North (KFFN), Castle Dome Heliport (CDH), Castle Dome

Heliport Annex (CDA), Dynamometer Test Course (DYNO), West Environmental Test Area (WETA), South Cibola Range (CIB) and North Firing Front Road Extension (NFF).

KOFA Firing Range extends 55 miles east from the Laguna area. KOFA Range is an integrated facility for the open air testing of direct and indirect fire from tanks, artillery, mortars and small missiles, and mines. The KOFA Range complex supports testing through 21 fixed, permanent firing positions, with over 310 survey firing points. The KOFA Range area includes the Front Firing areas (i.e., KFFS and KFFN), the Terminal Ballistics Evaluation, and the Extended Range Munitions area, located in the KOFA Firing Range East (KFRE) area. Cibola Range extends 40 miles north from the Laguna area. Cibola Range is the primary test area used for air delivery aircraft, aircraft armament, fire control and manned and unmanned aircraft testing. The CDH and CDA facilities are located in the southeast corner of Cibola Range.

J02.2 Water System Description

The water utility system at YPG actually consists of nine potable water (PW) and five non-potable water (NPW) systems. The nine PW systems serve the MAA, YTC, LAAF, KFFS, KFFN, CDH/CDA, WETA, CIB and NFF areas. Two of the five non-potable systems serve the MAA and DYNO areas and the remaining three systems serve outlying areas within the KFRE area. The water utility systems components include 18 active water wells, two water treatment plants (WTP), seven booster pump stations (BPS), 13 ground storage tanks, five elevated storage tanks and approximately 276,510 linear feet of pipe ranging in size from less than 2-inch to 14-inch in diameter. The drinking water systems are regulated by the state of Arizona. Six (6) systems are recognized, of which five (5) of those six (6) systems are regulated by the State of Arizona. Water rights are not included in the privatization of the system and are not in any way, shape, or form to be considered as part of, or within the scope of this solicitation.

The following table details key information regarding YPG's 18 active ground water wells which supply raw water to both the PW and NPW utility systems. The wells pumping capacities range from 55 to 1,750 gallons per minute (gpm).

Table 1 – Ground Water Wells

System	Name	Facility Number	ADEQ Permit	Location	Map Grid	Year Installed	Flow (gpm)	Pump (HP)	FY2003 1,000 Gallons
PW	Well "X"	1496	14-403	MAA	2107	1952	960	100	47,484
PW	Well "Y"	1506	14-403	MAA	2207	1959	780	100	0
PW	Well "W"	1499	14-403	MAA	2207	1997	1,750	75	66,478
PW	Well "Z"	1500	14-403	MAA	2107	1997	1,100	50	84,204
PW	Well "T"	2195	14-363	YTC	2009	1985	240	30	11,673
PW	Well "U"	2450	14-363	YTC	2010	1995	150	25	4,995
PW	Well "B"	3035	14-361	LAAF	2209	1985	240	30	5,729
PW	Well "I"	3531	14-367	KFFS	2212	1952	240	30	27,978
PW	Well "J"	3463	14-367	KFFN	2413	1971	240	30	14,237
PW	Well "H"	3464	14-367	KFFN	2413	1958	240	25	9,959
PW	Well "V"	5011	None	WETA	2709	1952	75	10	0
PW	Well "S"	5010	None	WETA	2709	1994	150	20	1,247
PW	Well "M"	6099	14-364	CDH	3116	1969	150	60	7,424
PW	Well "G"	3108	None	DYNO	2411	2001	200	-	3,590
NPW	Well "F"	WW730	None	CIB	2510	2002	150	60	6,543
NPW	Well "R"	WW397	None	KFRE	-	1973	150	25	2,247
NPW	Well "L"	WW487	None	KFRE	HX	1972	150	10	1,607
NPW	Well "K"	3695	None	KFRE	KW	1972	55	7.5	628

With the exception of Wells "Y" and "W", the raw water pumped from the remaining PW wells is treated with chlorine injection. A small chemical pump draws a small amount of water from the well discharge piping and pumps the water through a chlorine injector where the chlorine gas is added, producing a concentrated chlorine solution that flows into the water system. Each of the wells is equipped with a flow rate and volume-totalizing meter.

In addition to chlorine injection at the wells, YPG has two WTP facilities which provide treated water to the MAA and the CDH/CDA areas. Completed in 1986, MAA's WTP produces between 180,000 to 220,000 gallons of PW per day during the summer. During the winter months the average water production rate is between 100,000 and 120,000 gallons per day (gpd). The treatment processes include chlorine injection, soda ash and other chemicals, which enhance the treatability and reduce the corrosion potential in the water lines. Completed in 1993, CDA's WTP is a small, reverse osmosis (RO) treatment plant which produces roughly 2,800 to 3,000 gallons of PW per day, at an average rate of 2 gpm.

The following table summarizes key information regarding YPG's water storage tanks located throughout the Installation.

Table 2 – Water Storage Tanks

Type	Facility Number	Location	Map Grid	Year Installed	Capacity (gallons)	Connected Wells
Ground	1098	MAA	2207	1988	250,000	"W", "X", "Y" & "Z"
Ground	1099	MAA	2207	1988	250,000	"W", "X", "Y" & "Z"
Ground	0460	MAA WTP	2207	1983	50,000	"W", "X", "Y" & "Z"
Ground	0461	MAA WTP	2207	1986	50,000	"W", "X", "Y" & "Z"
Ground	2955	LAAF, (Air Cargo)	2310	1992	5,000	"T" & "U"
Ground	3563	KFFN	2613	1960	50,000	"H" & "J"
Ground	3480	KFFN	2414	1973	500,000	"H" & "J"
Ground	WT510	CIB (Site 4)	2510	1971	5,000	"S" & "V"
Ground	5104	WETA	2609	1971	1,000	"S" & "V"
Ground	WT310	DYNO	2411	1994	10,000	"G"
Elevated	2350	YTC	2109	1954	150,000	"T" & "U"
Elevated	3006	LAAF	2209	1962	100,000	"B"
Elevated	3526	KFFS	2212	1954	75,000	"I"
Elevated	6082	CDH	3009	1960	60,000	"M"
Elevated	WT600	CDA	3314	1993	60,000	"M"
Deluge	3028	LAAF	2209	1970	100,000	"B"
Deluge	6086	CDH	3016	1969	125,000	"M"
Ground	463	MAA WTP	2207	1986	5,000	"W", "X", "Y", & "Z"
Ground	2964	LAAF, (Air Cargo)	2310	1992	1,000	"T" & "U"
Deluge	2957	LAAF, (Air Cargo)	2310	1992	150,000	"T" & "U"
Ground	2958	LAAF, (Air Cargo)	2310	1992	1,000	"T" & "U"

There are also several small water storage tanks and distribution systems which are supplied with water hauled in. Although the bulk delivery of PW to these systems is included in the privatization action, the small systems have not been included in the inventory. Additionally, the earthen water storage reservoirs at YPG are not included in this inventory.

There are seven BPSs at YPG. For the most part, the pumping stations transfer water from one area to another. The following table details the facility number, location, year installed and the function of each BPS.

Table 3 – Booster Pump Stations

Facility Number	Location	Map Grid	Year Installed	Function
PS250	YTC	2109	1992	Station includes a 5HP electric pump, 100 GPM and associated control system to pump water from YTC to Air Cargo Area.
PS295	LAAF, Air Cargo	2109	1996	Contains 2 each 5 HP electric pumps and pumps water in the Air Cargo Area. (non-potable water)
3478	KFFN	2413	1973	7.5 Hp motor and pump. Pumps water from KFFS to KFFN.
3479	KFFN	2413	1973	Two 15 HP motors w/200 gpm pumps. Pumps water from Tank 3563 to Tank 3480.
PS348	KFFN, Twin Peaks	Twin Peaks	1983	10 Hp 200 gpm centrifugal pump. Pumps water from Tank 3480 to CDH.
PS510	CIB (Site 4)	2609	1963	5 HP, 50 gpm pump and motor. Pumps water from Tank WT510 to Bldg. 3125.
6008	CDA	3314	1993	Pumps water from RO units to the storage tanks.

The PW and NPW distribution systems includes approximately 5,495 feet of 14-inch, 38,850 feet of 12-inch, 5,825 feet of 10-inch, 79,684 feet of 8-inch, 23,650 feet of 6-inch, 67,085 feet of 4-inch, 29,485 feet of 3-inch, 25,181 feet of 2- and 2-1/2 inch, 1,255 feet of less than 2-inch diameter pipe; 143 main valves; 150 fire hydrants; and roughly 892 service connections. (The PW and NPW utility component quantities were "taken-off" of the utility system drawings provided by Installation personnel.)

Although the PW and NPW utility systems serving MAA are connected, the MAA systems are not interconnected with the other water systems. The WETA and CIB PW systems are small stand-alone systems and are not interconnected with the other water utility systems. The YTC and LAAF PW utility systems are interconnected. The KFFS, KFFN, CDH/CDA and the NFF water utility systems are interconnected. The NPW utility system serving the DYNO and KFRE areas are stand-alone systems and are not interconnected.

Main Administrative Area

The PW and NPW utility systems at MAA includes four ground water wells, one WTP, five ground storage tanks, approximately 85,565 linear feet of pipe ranging in size from 2- and 2-1/2-inch to 12-inch diameter pipe, 83 main valves and 69 fire hydrants. The water treatment plant is an Electro Dialysis Reversal water treatment plant. The operations and maintenance manual for the plant is part of the technical library.

Wells "X", "Y", "Z" and "W", located along the west side of MAA near the Colorado River, pump the ground water to a 50,000 gallon raw water ground storage tank (Facility No. 0461) located at the MAA WTP. Installed in 1952, Well "X" (Facility No. 1496) has a flow rate of 960 gpm and produced roughly 47,484 thousand gallons (Kgallons) during Fiscal Year (FY) 2003. Well "Y" (Facility No. 1506), installed in 1959, has a flow rate of 780 gpm; however, did not produce any raw water in FY2003. Wells "W" (Facility No. 1499) and "Z" (Facility No. 1500) were both installed in 1997. Well "W" has a flow rate of 1,750 gpm and produced 66,478 Kgallons in FY2003. Well "Z" has a flow rate of 1,100 gpm and produced 84,204 Kgallons in FY2003. Each well pump house has a diesel engine to supply auxiliary power to the well pumps during power outages.

As previously noted, the raw water is pumped from the wells to the raw water storage tank at the MAA WTP. Constructed in 1986 along with the MAA WTP, Facility No. 0461 is a 50,000 gallon ground storage tank. From the raw water storage tank, the raw water is chlorinated for disinfection and either flows into the MAA WTP or is pumped into the NPW system through a storage tank (Facility No. 463). Completed in 1986, the MAA WTP produces between 180,000 to 220,000 gallons of PW per day during the summer. During the winter months the average water production rate is between 100,000 and 120,000 gpd. The treatment processes include chlorine injection, soda ash and other chemicals, which enhance the treatability and reduce the corrosion potential in the water lines.

After treatment, the PW is pumped into a 50,000 gallon ground storage tank (Facility No. 0460), located at the MAA WTP. Two pumps transfer water from the ground storage tank into the distribution system. The pumped water flows into the system to satisfy the system demand. The excess PW is pumped into the two 250,000-gallon ground storage tanks (Facility Nos. 1098 and 1099), which provide both pressure and a source of water when the pumps at the plant are not operating. Both ground storage tanks were installed in 1988.

The MAA PW distribution system includes approximately 34,410 feet of water pipe, 83 main valves, 69 fire hydrants and 271 service connections. The most common types of pipe in the PW distribution system are cast iron and asbestos-cement. For inventory purposes, the MAA PW distribution system was subdivided into five PW areas. Subdivision was based in part upon the date of construction, per real property records, of facilities located within the sub-areas.

MAA Area PW1 includes the housing area south and west of Halo and "D" Streets and the hospital. Constructed largely in 1948, the PW distribution system within this area includes approximately 3,525 feet of 8-inch, 200 feet of 6-inch and 625 feet of 4-inch diameter water pipe; 14 fire hydrants; seven main valves; and 66 service connections.

MAA Area PW2 includes the housing area on the east side of MAA, east of Cutter Avenue. Constructed in 1959, the PW system within this area includes approximately 1,660 feet of 10-inch, 10,980 feet of 8-inch and 340 feet of 6-inch diameter water pipe; 25 fire hydrants; 37 main valves; and 135 service connections.

MAA Area PW3 includes the housing area on the west side of MAA, south of 1st Street, west of Cutter Avenue and east of "D" Street. This area also includes the elementary school, commissary, bowling alley and gymnasium complex. Constructed in 1957, the PW system within this area includes approximately 1,185 feet of 10-inch, 550 feet of 8-inch and 4,960 feet of 6-inch diameter water pipe; 13 fire hydrants; 12 main valves; and 21 service connections.

MAA Area PW4 includes the west central portion of MAA, south of 1st Street, west of "D" Street and north of Halo Street. Constructed in 1948, the PW system within this area includes approximately 435 feet of 10-inch, 2,295 feet of 8-inch, 1,755 feet of 6-inch and 1,595 feet of 4-inch diameter water pipe; 13 fire hydrants; 17 main valves; and 39 service connections.

MAA Area PW5 includes the northern portion of MAA, north of 1st Street. Constructed in 1948, the PW system within this area includes approximately 805 feet of 12-inch, 880 feet of 8-inch, and 2,620 feet of 6-inch diameter water pipe; four fire hydrants; 10 main valves; and 10 service connections.

In addition to the PW system, MAA also has a NPW system to supply raw water for irrigation purposes. For the most part, the NPW system parallels the PW system and is located primarily in the housing areas. Water is drawn from the raw water tank near the treatment plant, injected with chlorine, and pumped into the NPW system by three pumps at the water plant. Installed in 1982, the NPW system is predominately

polyvinyl chloride (PVC) pipe. The NPW system includes approximately 24,205 feet of 8-inch, 5,930 feet of 6-inch, 5,525 feet of 4-inch and 15,495 feet of 2- and 2-1/2 inch diameter pipe.

Yuma Test Center

YTC's PW utility system serves both the YTC and Air Cargo areas. The utility system includes two ground water wells, two BPSs, one ground storage tank, one elevated storage tank, approximately 27,810 linear feet of pipe ranging in size from less 2-inch to 8-inch diameter pipe, 13 main valves and 23 fire hydrants. YTC's PW utility system is connected to LAAF's PW utility system via 8,420 feet of 8-inch PVC.

Installed in 1985 and 1995, Wells "T" and "U" pump the raw water (which is chlorinated water) into YTC's PW distribution system. Well "T" (Facility No. 2195), located on the north side of YTC, has a flow rate of 240 gpm and produced roughly 11,673 Kgallons during FY2003. Well "U" (Facility No. 2450), located on the east side portion of YTC, has a flow rate of 150 gpm and produced roughly 4,995 Kgallons during FY2003.

The chlorinated water is pumped into the distribution system to satisfy the system demand. The excess water is pumped into the 150,000 gallon elevated storage tank (Facility No. 2350) or to the Air Cargo area via two BPSs. Constructed in 1954, the elevated storage tank provides both pressure and a source of water when the well pumps are not operating.

YTC's PW distribution system includes approximately 11,804 feet of 8-inch, 4,390 feet of 6-inch, 2,865 feet of 4-inch, 7,996 feet of 2- and 2-1/2 inch, 755 feet of less than 2-inch diameter water pipe; 13 main valves; 23 fire hydrants; and 16 service connections.

Laguna Army Airfield

LAAF's PW utility system includes one ground water well, one elevated storage tank, one deluge storage tank, approximately 12,835 linear feet of pipe ranging in size from less 2-inch to 10-inch diameter pipe, nine main valves and eight fire hydrants. As previously noted, LAAF's PW utility system is connected to YTC's PW utility system via 8,420 feet of 8-inch PVC.

Installed in 1985, Well "B" (Facility No. 3035) pumps the raw water (which is chlorinated) into the LAAF distribution system. Well "B", located in the north side of LAAF, has a flow rate of 240 gpm and produced roughly 5,729 Kgallons during FY2003.

The chlorinated water is pumped into the distribution system to satisfy the system demand. The excess water is pumped into the 100,000 gallon elevated storage tank (Facility No. 3006) or the 100,000 gallon deluge storage tank (Facility No. 3028). Constructed in 1962, the elevated storage tank provides both pressure and a source of water when the well pump is not operating. The deluge tank was constructed in 1970.

LAAF's PW distribution system includes approximately 775 feet of 10-inch, 9,195 feet of 8-inch, 890 feet of 6-inch, 1,530 feet of 4-inch, 70 feet of 3-inch, 375 feet of 2- and 2-1/2 inch diameter water pipe; nine main valves; and eight fire hydrants.

Four storage tanks (Facility Nos. 2955, 2964, 2957, and 2958) are located on the Air Cargo area at LAAF. Water is pumped to these tanks from YTC pump station PS250.

KOFA Firing Front South

KFFS's PW utility system includes one ground water well, one elevated storage tank, approximately 43,405 linear feet of pipe ranging in size from less 2-inch to 12-inch diameter pipe, 14 main valves and 25 fire hydrants. KFFS's PW utility system is connected to KFFN's PW utility system.

Installed in 1952, Well "I" (Facility No. 3531) pumps the raw water (which is chlorinated water) into KFFS's PW distribution system. Well "I" has a flow rate of 240 gpm and produced roughly 27,978 Kgallons during FY2003. The chlorinated water is pumped from the well into the distribution system to satisfy the system demand. The excess water is pumped into the 75,000 gallon elevated storage tank (Facility No. 3526). Constructed in 1954, the elevated storage tank provides both pressure and a source of water when the well pump is not operating.

KFFS's PW distribution system includes approximately 27,520 feet of 12-inch, 1,770 feet of 10-inch, 10,420 feet of 8-inch, 995 feet of 6-inch, 1,335 feet of 4-inch, 250 feet of 3-inch, 905 feet of 2- and 2-1/2 inch, 210 feet of less than 2-inch diameter water pipe; 14 main valves; 25 fire hydrants; and 19 service connections.

KOFA Firing Front North

KFFN's PW utility system includes two ground water wells, two ground storage tanks, three BPSs, approximately 40,315 linear feet of pipe ranging in size from less 2-inch to 14-inch diameter pipe, five main valves and seven fire hydrants. As previously noted, KFFN's PW utility system is connected to KFFS's PW utility system. PW is pumped from KFFS to KFFN via a BPS. KFFN's PW utility system is also connected to the CDH/CDA utility system via a BPS and the NFF utility system.

Wells "H" and "J" pump the raw water (which is chlorinated water) into KFFN's PW distribution system. Installed in 1958, Well "H" (Facility No. 3464) has a flow rate of 240 gpm and produced roughly 9,959 Kgallons during FY2003. Installed in 1971, Well "J" (Facility No. 3463) has a flow rate of 240 gpm and produced roughly 14,237 Kgallons during FY2003. The chlorinated water is pumped from the wells into the distribution system to satisfy the system demand. The excess water is pumped into the 50,000 gallon ground storage tank (Facility No. 3563) or into the 500,000 gallon ground storage tank (Facility No. 3480), via a BPS. Constructed in 1960 and 1973, both ground storage tanks provide both pressure and a source of water when the well pumps are not operating. The third BPS pumps water to KFFN from KFFS.

KFFN's PW distribution system includes approximately 5,495 feet of 14-inch, 10,525 feet of 12-inch, 570 feet of 8-inch, 1,570 feet of 6-inch, 21,985 feet of 4-inch, 170 feet of less than 2-inch diameter water pipe; five main valves; and seven fire hydrants.

Castle Dome Heliport / Castle Dome Heliport Annex

CDH/CDA's PW utility system includes one ground water well, one RO WTP, one ground storage tank, two elevated storage tanks, one BPS, approximately 38,665 linear feet of pipe ranging in size from less 2-inch to 8-inch diameter pipe, eight main valves and seven fire hydrants. CDH/CDA's PW utility system is connected to KFFN's PW utility system via NFF's PW utility system.

Installed in 1969, Well "M" (Facility No. 6099) pumps the raw water (which is chlorinated water) into CDH/CDA's PW distribution system. Well "M" has a flow rate of 150 gpm and produced roughly 7,424 Kgallons during FY2003. The chlorinated water is pumped from the well into the distribution system to satisfy the system demand. The excess water is pumped into CDH's 60,000 gallon elevated storage tank (Facility No. 6082), CDH's 125,000 gallon deluge tank (Facility No. 6086), CDA's 60,000 elevated

storage tank (Facility No. WT600) or CDA's RO WTP. The elevated storage tanks, constructed in 1960 and 1993, provide both pressure and a source of water when the well pump is not operating. Completed in 1993, CDA's WTP is a small, reverse osmosis (RO) treatment plant which produces roughly 2,800 to 3,000 gallons of PW per day, at an average rate of 2 gpm.

The PW distribution system located within the CDH area includes approximately 3,645 feet of 8-inch, 5,325 feet of 4-inch, 6,535 feet of 3-inch, 410 feet of 2- and 2-1/2-inch diameter water pipe; four main valves; and six fire hydrants. The PW distribution system located within the CDA area includes approximately 22,630 feet of 3-inch, 120 feet of less than 2-inch diameter water pipe; four main valves; and one fire hydrant.

Dynamometer Test Course

DYNO's NPW utility system includes one ground water well, one ground storage tank and approximately 310 linear feet of 4-inch water pipe. Installed in 2001, Well "G" (Facility No. 3108) pumps the raw water (which is chlorinated water) into DYNO's NPW distribution system. Well "G" has a flow rate of 200 gpm and produced roughly 3,590 Kgallons during FY2003. The chlorinated water is pumped from the well into the distribution system to satisfy the system demand. The excess water is pumped into the 15,000 gallon ground storage tank (Facility No. 3108). Constructed in 1958, the ground storage tank provides both pressure and a source of water when the well pump is not operating.

West Environmental Test Area

WETA's PW utility system includes two ground water wells, two ground storage tanks and approximately 8,540 linear feet of 4-inch water pipe. Wells "V" and "S" pump the raw water (which is chlorinated water) into WETA's PW distribution system. Installed in 1952, Well "V" (Facility No. 5011) has a flow rate of 75 gpm and did not produce any water during FY2003. Installed in 1994, Well "S" (Facility No. 5010) has a flow rate of 150 gpm and produced roughly 1,247 Kgallons during FY2003. The chlorinated water is pumped from the wells into the distribution system to satisfy the system demand. The excess water is pumped into the 5,000 gallon ground storage tank (Facility No. 3126) or into the 1,000 gallon ground storage tank (Facility No. 5104) via a BPS (Facility No. PS510). Constructed in 1971, both ground storage tanks provide both pressure and a source of water when the well pumps are not operating.

South Cibola Range, IRCC

Water for road and test course maintenance is supplied in the south Cibola Range area by Well "F". Well "F" is designated as Facility No. WW730 and it pumps water into an adjacent reservoir (Facility No. WR730, which in turn feeds a game watering pond, i.e., Facility No. WR731). The water is not chlorinated or treated in any manner.

North Firing Front Road Extension

NFF's PW utility system includes approximately 11,840 linear feet of 4-inch water pipe. NFF's PW utility system connects KFFN's and CDH/CDA's PW utility systems.

KOFA Firing Range East

There are three small NPW systems located on the eastern side of KOFA Firing Range. The systems in these areas are used on an intermittent basis to support range operations in the KOFA range area. Installed in 1972, Wells "K", "L" and "R" pump raw water through approximately 1,615 feet of 8-inch pipe pipe to small earthen reservoirs that provide NPW storage for the range operations. Well "K" (Facility No. 3695) has a flow rate of 55 gpm and produced roughly 628 Kgallons during FY2003. Well "L" (Facility No. WW487) has a flow rate of 150 gpm and produced roughly 1,607 Kgallons during FY2003. Well "R" (Facility No. WW397) has a flow rate of 150 gpm and produced roughly 2,247 Kgallons during FY2003.

Installation Adjustments

Based upon the discussion with the Installation personnel in April 2004, 330 residential services, 250 industrial services and 11 fire hydrants were added to the PW and NPW inventories. The additional services primarily reflect service connections associated with the NPW systems.

J02.2.1 Inventory

The Offeror shall base the proposal on site inspections, information in the technical library, other pertinent information, and to a lesser degree the above description and following inventory list. Under no circumstances shall the successful Offeror be entitled to any rate adjustments based on the accuracy of the description above and inventory below.

Table 4 provides a general listing of the major water system fixed assets for the YPG water systems included in the purchase. The system will be sold in a "as is, where is" condition without any warranty, representation or obligation on the part of Government to make any alterations, repairs, or improvements. Ancillary equipment attached to, and necessary for, operating the system, though not specifically mentioned herein, is considered part of the purchased utility**.**

Table 4 - Fixed Inventory

System Component	Size	Quantity	Unit	Approximate Year of Construction
Wells - Potable Water				
Well "T", Facility No. 2195, YTC	346 KG	1	Each	1985
Well "U", Facility No. 2450, YTC	216 KG	1	Each	1995
Well "B", Facility No. 3035, LAAF	346 KG	1	Each	1985
Well "I", Facility No. 3531, KFFS	346 KG	1	Each	1952
Well "H", Facility No. 3464, KFFN	346 KG	1	Each	1958
Well "J", Facility No. 3463, KFFN	346 KG	1	Each	1971
Well "M", Facility No. 6099, CDH	216 KG	1	Each	1969
Well "X", Facility No. 1496, MAA	1,382 KG	1	Each	1952
Well "Y", Facility No. 1506, MAA	1,123 KG	1	Each	1959
Well "Z", Facility No. 1500, MAA	1,584 KG	1	Each	1997
Well "W", Facility No. 1499, MAA	2,520 KG	1	Each	1997
Well "G", Facility No. 3108, DYNO	288 KG	1	Each	2001
Well "S", Facility No. 5010, CIB (Site 4)	216 KG	1	Each	1994
Well "V", Facility No. 5011, WETA	108 KG	1	Each	1952
Total Wells - Potable Water		14	Each	
Wells - Non-Potable Water				

System Component	Size	Quantity	Unit	Approximate Year of Construction
Well "L", Facility No. WW487, KFRE	216 KG	1	Each	1972
Well "K", Facility No. 3695, KFRE (SWTR)	79 KG	1	Each	1972
Well "F", Facility No. WW730, CIB	216 KG	1	Each	2002
Well "R", Facility No. WW397, KFRE	216 KG	1	Each	1973
Total Wells – Non-Potable Water		4	Each	
Booster Pump Stations				
Facility No. 3479, KFFN	576 KG	1	Each	1973
Facility No. PS348, KFFN, Twin Peaks	288 KG	1	Each	1983
Facility No. PS510, CIB (Site 4)	72 KG	1	Each	1963
Facility No. 3478, KFFN	288 KG	1	Each	1973
Facility No. PS250, YTC	144 KG	1	Each	1992
Facility No. 3695, YTC, Air Cargo		1	Each	1996
Facility No. 6008, CDA	2.5 KG	1	Each	1993
Subtotal Booster Pump Stations		7	Each	
Ground Storage Tanks				
Facility No. 3563, KFFN	50,000 gal.	1	Each	1960
Facility No. 3480, KFFN	500,000 gal.	1	Each	1973
Facility No. 2955, LAAF, (Air Cargo)	5,000 gal.	1	Each	1992
Facility No. 6086, CDH (Deluge)	125,000 gal.	1	Each	1969
Facility No. 5104, WETA	1,000 gal.	1	Each	1971
Facility No. WT510, CIB (Site 4)	5,000 gal.	1	Each	1994
Facility No. 3028, LAAF (Deluge)	100,000 gal.	1	Each	1970
Facility No. 1098, MAA	250,000 gal.	1	Each	1988
Facility No. 1099, MAA	250,000 gal.	1	Each	1988
Facility No. 460, MAA WTP	50,000 gal.	1	Each	1983
Facility No. 461, MAA WTP	50,000 gal.	1	Each	1986
Facility No. WT310, DYNO	10,000 gal.	1	Each	1998
Facility No. 463, MAA WTP	5,000 gal.	1	Each	1986
Facility No. 2964, LAAF (Air Cargo)	1,000 gal.	1	Each	1992
Facility No. 2957, LAAF (Air Cargo) (Deluge)	150,000 gal.	1	Each	1992
Facility No. 2958, LAAF (Air Cargo)	1,000 gal.	1	Each	1992
Subtotal Ground Storage Tanks	1,553,000 gal.	16	Each	
Elevated Storage Tanks				
Facility No. 3006, LAAF	100,000 gal.	1	Each	1962
Facility No. 3526, KFFS	75,000 gal.	1	Each	1954
Facility No. 6082, CDH	60,000 gal.	1	Each	1960
Facility No. WT600, CDA	60,000 gal.	1	Each	1993
Facility No. 2350, YTC	150,000 gal.	1	Each	1954
Subtotal Elevated Storage Tanks	445,000 gal.	5	Each	

System Component	Size	Quantity	Unit	Approximate Year of Construction
Potable Water Treatment Facilities				
MAA WTP (Facility No. 0462)	648 KG	1	Each	1986
KFR WTP (Facility No. 3501)	1 KG	1	Each	1981
CDA WTP (Facility No. 6008)	3.6 KG	1	Each	1993
Subtotal PWT Facilities		3	Each	
Pipe				
Various Material Types	<2 inch	1,255	Linear Feet	1953
Various Material Types	2 & 2-1/2 inch	25,181	Linear Feet	1971
Various Material Types	3 inch	29,485	Linear Feet	1960
Various Material Types	4 inch	67,085	Linear Feet	1959
Various Material Types	6 inch	23,650	Linear Feet	1960
Various Material Types	8 inch	79,684	Linear Feet	1964
Various Material Types	10 inch	5,825	Linear Feet	1956
Various Material Types	12 inch	38,850	Linear Feet	1954
Various Material Types	14 inch	5,495	Linear Feet	1954
Subtotal Pipe		276,510	Linear Feet	
Bldg. Services – Residential (See Note 1)	--	578	Each	1955
Bldg. Services – Industrial (See Note 1)	--	314	Each	1953
Main Valves	--	143	Each	1956
Air Release Valves	--	4	Each	1982
Fire Hydrants	--	150	Each	1954

Note 1: Building Service connections include tap, shut-off valve, etc, and an average of 100 linear feet of pipe per connection. That pipe length is not included in the "Subtotal Pipe"

J02.2.2 Water System Non-Fixed Equipment and Specialized Tools Inventory

Table 5 lists other ancillary equipment (spare parts) and **Table 6** lists specialized vehicles and tools included in the purchase. Offerors shall field verify all equipment and tools prior to submitting a bid. Offerors shall make their own determination of the adequacy of all equipment and tools. The successful Offeror shall provide any and all equipment, vehicles, and tools, whether included in the purchase or not, to maintain a fully operating system under the terms of this contract.

Table 5 - Spare Parts

Quantity	Item	Make/Model	Description	Remarks
Some spare parts will be provided. Actual inventory will be provided at the time of negotiations and value established at that time. Existing inventory will be included in the Technical Library.				

Table 6 - Specialized Equipment and Vehicles

Description	Quantity	Location	Maker
None			

J02.2.3 Water System Manuals, Drawings, and Records Inventory

Table 7 lists the manuals, drawings, and records that will be transferred with the system.

Table 7 - Manuals, Drawings, and Records

Quantity	Item	Description	Remarks
The installation maintains a limited collection of manuals, drawings and records on installed components of the water system. This information or copies thereof will be transferred during the transition period. Yuma Proving Ground will retain originals and receive updates on system as alterations are completed.			

J02.2.4 Known System Deficiencies

Table 8 details the planned upgrade projects associated with the known deficiencies in the water utility systems. However, it is the responsibility of the Offeror to perform due diligence and make their own determination regarding known and unknown deficiencies within the systems. Although not a deficiency at this time, the YPG systems will be required to meet or exceed the requirements of the 2006 Federal Arsenic Ruling.

Table 8 - Known Deficiencies

Project No.	Description	Location
0556	Replace Valves at Wells "X" & "Y"	Wells "X" & "Y"
0569	Repair/Replace Fill Stand & Valves	KOFA Firing Range
0570	Replace Water Main Valves	KOFA Firing Range
0611	Run New Water Service	Facility No. 2105
0845	Replace R.O. Membranes	Facility No. 0462
1005	Replace Water Line	KOFA Firing Range
1079	Replace Ground Water Tank - 15,000 Gal.	Facility No. 3108
1080	Repair Ground Water Tank - 250,000 Gal.	Facility No. 1098
1081	Repair Elevated Water Tank - 75,000 Gal.	Facility No. 3526
1082	Repair Ground Water Tank – 50,000 Gal.	Facility No. 0460
1083	Repair Ground Water Tank – 50,000 Gal.	Facility No. 3563
1084	Repair Ground Water Tank – 50,000 Gal.	Facility No. 0461
1085	Repair Ground Water Tank - 500,000 Gal.	Facility No. 3480
1086	Repair Elevated Water Tank - 150,000 Gal.	Facility No. 2350
1087	Repair Elevated Water Tank - 100,000 Gal.	Facility No. 3006
1088	Repair Elevated Water Tank - 60,000 Gal.	WT600
1089	Repair Ground Water Tank - 250,000 Gal.	Facility No. 1099
1090	Repair Deludge Water Tank - 100,000 Gal.	Facility No. 3028
1091	Repair Deludge Water Tank - 125,000 Gal.	Facility No. 6086
1092	Repair Elevated Water Tank - 60,000 Gal.	Facility No. 6082
1093	Repair Ground Water Tank - 150,000 Gal.	Facility No. 2955
1380	Repair Well "W"	Well "W"
1581	Repair Well "K"	Well "K"
2629	Extend Waterline	Site 8

J02.3 Current Service Arrangement

All of YPG's water is supplied by ground water wells located on the Installation. The WTP plants and water distribution systems are operated and maintained by a Contractor. The annual volumes of water produced for FY1997 through FY2000 and FY2003 are summarized in **Table 9**.

Table 9 – Water Pumped from Wells

	FY1997 (1,000 gal)	FY1998 (1,000 gal)	FY1999 (1,000 gal)	FY2000 (1,000 gal)	FY2003 (1,000 gal)
YPG Produced Water	420,030	322,075	323,983	383,462	296,023

J02.4 Secondary Metering

The Installation may require secondary meters for internal billing of their reimbursable customers, utility usage management and energy conservation monitoring. The Offeror shall assume full ownership and responsibility for existing and future secondary meters IAW Paragraph C.3, Future Secondary Meters.

J02.4.1 Existing Secondary Meters

Table 10 provides a listing of the secondary meters which will be transferred to the Offeror. The Offeror shall provide meter readings once a month for all secondary meters.

Table 10 - Existing Secondary Meters

Meter Location	Meter Description
Commissary Bldg 536	
Price School Bldg 1010	
Border Patrol Trailer	

J02.4.2 Required New Secondary Meters

The Contractor shall install and calibrate new secondary meters as listed in **Table 11**. New secondary meters shall be installed IAW Clause C.13, Operational Transition Plan. After installation, the Contractor shall maintain and read these meters IAW Clause C.3 and J01.5 below. Although at the present time, the Installation does not require any new meters to be installed, if meters are required in the future, the Contractor shall comply with Clause C.3.3. New buildings and fully renovated buildings will require secondary meters.

Table 11 - New Secondary Meters

Meter Location	Description
None.	

J02.5 Submittals

The Contractor shall provide the Government monthly submittals for the following:

Invoice (IAW G.2). The Contractor's monthly invoice shall be presented in a format proposed by the Contractor and accepted by the Contracting Officer. Invoices shall be submitted by the 25th of each month for the previous month. Invoices shall be submitted to the Contracting Officer's designee. (This information will be provided upon award.)

Outage Report. The Contractor's monthly outage report will be presented in a format proposed by the Contractor and accepted by the Contracting Officer. Outage reports shall include the following information for Scheduled and Unscheduled outages:

> ***Scheduled:*** Requestor, date, time, duration, facilities affected, feedback provided during outage, outage notification form number, and digging clearance number.
>
> ***Unscheduled:*** Include date, time and duration, facilities affected, response time after notification, completion times, feedback provided at time of outage, specific item failure, probability of future failure, long-term fix, and emergency digging clearance number.

Outage reports shall be submitted by the 25th of each month for the previous month. Outage reports shall be submitted to the Contracting Officer's designee. (This information will be provided upon award.)

Meter Reading Report. If required by the Contracting Officer, the monthly meter reading report shall show the current and previous month readings for all secondary meters. The Contractor's monthly meter reading report will be prepared in the format proposed by the Contractor and accepted by the Contracting Officer. Meter reading reports shall be submitted by the 15th of each month for the previous month. Meter reading reports shall be submitted to the Contracting Officer's designee. (This information will be provided upon award.)

System Efficiency Report. If required by Paragraph C.3, the Contractor shall submit a system efficiency report in a format proposed by the Contractor and accepted by the Contracting Officer. System efficiency reports shall be submitted by the 25th of each month for the previous month. System efficiency reports shall be submitted to the Contracting Officer's designee. (This information will be provided upon award.)

J02.6 Energy Savings and Conservation Projects

IAW Clause C.3, Utility Service Requirement, there are no projects planned or currently executed by YPG for energy conservation purposes.

J02.6 Service Area

IAW Paragraph C.4, Service Area, the service area is defined as all areas within the YPG boundaries.

J02.7 Off-Installation Sites

There are no off-Installation sites associated with this scope.

J02.8 Antennas on Elevated Water Tanks

The Installation reserves the exclusive right to use elevated water tanks to support communications antennas and associated equipment at no cost to the Government. The tanks will be used by the Installation to support existing antennas and new antennas as needed. Any antenna or electronic equipment to be installed on the water tanks by the Grantee, or others through agreements with the Grantee, must be approved by the Installation and must be compatible with the Installation's antenna systems. The Installation's antennas will always have primacy should there be compatibility conflicts between antennas.

J02.9 Specific Transition Requirements

IAW Clause C.13, Operational Transition Plan, **Table 12** lists service connections and disconnections required upon transfer, and **Table 13** lists the improvement projects required upon transfer of YPG's water system.

Table 12 - Service Connections and Disconnections

Location	Description
None.	

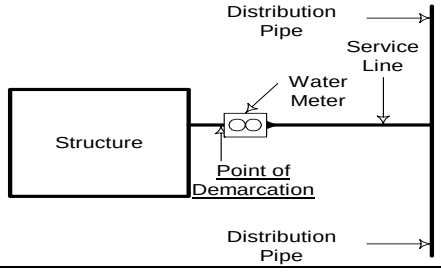
Table 13 - System Improvement Projects

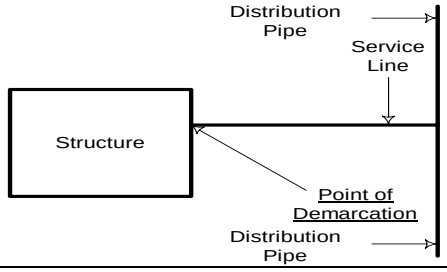
Location	Description	Year of Completion
None.		

J02.10 Water System Points of Demarcation

The point of demarcation is defined as the point on the piping system where ownership changes from the Grantee to the building owner. During the operation and maintenance transition period, concurrence on specific demarcation points will be documented during the joint inventory of facilities.

Table 14 – Lines of Demarcation – Yuma Proving Ground – Water Utility Systems

Point of Demarcation	Applicable Scenario	Sketch
Water meter or backflow device, or valve (closest apparatus to the exterior of the structure).	Water meter, backflow device, or valve is located on the service line entering the structure within 25 feet of the exterior of the structure.	

Point of Demarcation	Applicable Scenario	Sketch
Point where the service line enters the structure.	No water meter, backflow device, or valve exists on the service line entering the structure.	

J02.10.1 Unique Points of Demarcation

Table 15 lists anomalous points of demarcation that do not fit any of the above scenarios.

Table 15 - Unique Points of Demarcation

Building No.	Point of Demarcation Description
None.	